

**WHAT IS CLAIMED IS:**

1. An optical module of an optical isolator comprising:

a semiconductor laser for outputting a first linearly-polarized beam of a predetermined polarization mode;

5 a polarizer positioned to face an end of the semiconductor laser, wherein a polarization axis of the polarizer is at a  $45^\circ$  angle with a polarization direction of the first beam; and

a Faraday rotator between the semiconductor laser and the polarizer, wherein said rotator rotates the polarization direction of the first beam by  $45^\circ$  to substantially coincide  
10 with the polarization axis of the polarizer, , and rotates a second beam from the polarizer by  $45^\circ$ , wherein the second beam has a polarization mode polarized perpendicular to the first beam.

2. The optical module as set forth in claim 1, wherein the Faraday rotator provides the rotated first beam to the polarizer.

3. The optical module as set forth in claim 1, wherein the Faraday rotator provides  
15 the rotated second beam to the semiconductor laser.

4. The optical module as set forth in claim 1, further comprising a lens between the semiconductor laser and the Faraday rotator.

5. The optical module as set forth in claim 1, further comprising an optical element facing an outer surface of the polarizer.

6. The optical module as set forth in claim 5, wherein the optical element facing is a lens.

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7. The optical module as set forth in claim 1, wherein the polarization mode of the first beam is a TE mode.

8. The optical module as set forth in claim 3, wherein the polarization mode of the second beam received by the semiconductor laser after passing through the Faraday rotator is a TM mode.

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9. The optical module as set forth in claim 1, wherein the second beam received by the semiconductor laser after passing through the Faraday rotator has a polarization mode polarized perpendicular to the first beam.

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10. An optical module of an optical isolator comprising:

a semiconductor laser for outputting a first linearly-polarized beam of TM mode;

a polarizer disposed to face an end of the semiconductor laser, wherein a polarization axis of the polarizer is tilted at  $45^\circ$  angle to a polarization direction of the first

5 beam; and

a Faraday rotator between the semiconductor laser and the polarizer, wherein the rotator (1) rotates the polarization direction of the first beam by  $45^\circ$  to substantially coincide with the polarization axis of the polarizer, (2) outputs the rotated first beam to the polarizer, (3) rotates a second beam from the polarizer by  $45^\circ$ , wherein the rotated second  
10 beam has a polarization mode polarized perpendicular to the first beam, and (4) outputs the rotated second beam to the semiconductor laser.

11. The optical module as set forth in claim 7, wherein the second beam from the Faraday rotator to the semiconductor laser is a beam of a TE polarization mode linearly polarized perpendicular to the first beam.